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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/824,307

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Yuan C. Chou

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EXAMINER

NGUYEN, HIEP T

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/824,307		CHOU ET AL.	
	Examiner		Art Unit	
	Hiep T. Nguyen		2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-102 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-102 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/3/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-102 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-102 are rejected under 35 U.S.C. 102(b) as being anticipated by Lipasti, U.S. Patent No. 6,487,639.

- a. As per claim 1: Lipasti teaches a processor (12) that value predicts for selective instances of read operations, the processor value predicting for those instances of read operations with values that are unavailable in a first memory [e.g. L1 cache] and requested from a second memory [e.g. L2/L3 cache] , and that at least partially bases the selective value predictions on accuracy of the value predictions for prior corresponding missing instances of the read operations [figure 4, col. 5, line 62 through col. 6, line 28].
- b. As per claim 2: the further claimed limitation of “the first memory includes a low-latency memory” is also taught by Lipasti [since L1 cache is a low latency memory].
- c. As per claim 3: the further claimed limitation of “the low-latency memory includes one or more L1 cache and L2 cache” is also taught by Lipasti, as mentioned above [see also col. 5, line 65 through col. 6, line 2].
- d. As per claim 4: similarly to claims 1-3, the further claimed limitation is also taught by Lipasti [see figure 1, element 16; col. 5, lines 53-61].
- e. As per claim 5: the further claimed limitation is also taught by Lipasti [see col. 4, line 66 through col. 5, line 27; figure 3, element 54].

- f. As per claim 6: the further claimed limitation of “load store queue” is also taught by Lipasti through the buffer 60 [figure 3].
- g. As per claim 7: Lipasti further teaches entries for hosting indications of read operations, predicted values and value prediction qualifiers [see figure 3, elements 72, 92, 70, and 66].
- h. As per claim 8: Lipasti further teaches that the value prediction qualifiers (70) reflect the accuracy of prior value predictions [see col. 6, lines 19-29].
- i. As per claim 9: the further claimed limitation of confidence values is also taught by Lipasti [see again figure 3, element 70, col. 6, lines 19-29].
- j. As per claim 10: Lipasti further teaches that the processor causes invocation of a value prediction structure to value predict for the missing instances of read operations, and invocation being coincident with detection of a read operation instance missing in the first memory [see col. 8, lines 51-62].
- k. As per claims 11-19: the further claimed limitations of “traps” and “trap handler” are no more than the necessary elements for carrying the operation of value predicting in case the read instance is missed in the L1 cache. It appears that such elements are inherent in the Lipasti system since the normal operation must have been interrupted so that the value predicting operation can be carrying out in the event of the cache miss in the Lipasti L1 cache [see also Lipasti, figure 4, col. 8, line 42 through col. 9, line 26].
- l. As per claim 20-24: similarly to claims 11-19, the further claimed limitation is no more than necessary elements for carrying out an operation for handling the system state recovery in case a mis-predicted value has been used to satisfy a read instance.
- m. As per claims 25-49: each of the claimed steps is carried out by the corresponding elements in the system of claims 1-25. Accordingly, claims 25-49 are also rejected for the same reasons as set forth for those in claims 1-24.

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- n. Claims 50-82: the claimed processing system basically encompasses the same scope as that claimed in claims 1-24. Accordingly, the claims are also rejected for the same reasons as set forth for that in claims 1-24.
- o. Claims 83-98: the claimed computer program product basically encompasses the instructions for carrying out the claimed operations in claims 1-24. Accordingly claims 83-98 is also rejected for the same reasons as set forth for those in claims 1-24.
- p. As per claims 99-102: the claimed data structure basically encompasses the data for carrying out the claimed operations in claims 1-24. Accordingly, claims 99-102 are also rejected for the same reasons as set forth for those in claims 1-24.

Conclusion

- 4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - a. Dundas, 6,883,086, teaches an operation for repairing of mis-predicted load values.
 - b. Willke, II, 6,609,168, teaches a 2-bit value for specifying a measure of accuracy which is used in making the prediction for next burst read transfer following the same pattern.
- 5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hiep T. Nguyen whose telephone number is (571) 272-4197. The examiner can normally be reached on Monday-Friday from 6:30 AM-3:00 pm.
- 6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Hiep T. Nguyen
Primary Examiner
Art Unit 2187

HTN